Infant Mortality Rates in the Louisville Metro Area, Kentucky: Inconsistent Reporting Significantly Affects National Rankings

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INTRODUCTION

This study compared infant mortality rates (IMR) in Louisville, Kentucky as reported by official vital statistics to rates calculated based on different criteria with respect to estimated gestational age (EGA) .

OBJECTIVE

IMR is an overall indicator of the level of health of a city, state, and nation. It is associated with many factors such as maternal health, quality and access to medical care, and socioeconomic conditions. It is an often used metric in public health that justify various interventions (e.g., vaccination, prenatal care). Estimated gestational age (EGA) is used to differentiate viable vs. non-viable fetuses.

METHODS

For this analysis, all births and infant deaths were analyzed from 2009 – 2014. Infant mortality rates were analyzed by estimated gestational age according to 3 criteria:

- American College of Obstetricians and Gynecologists fetal viability <28 weeks EGA
- Probability of survival approaches 50% with high disability rate <24 weeks EGA
- World Health Organization fetal viability <20 weeks EGA

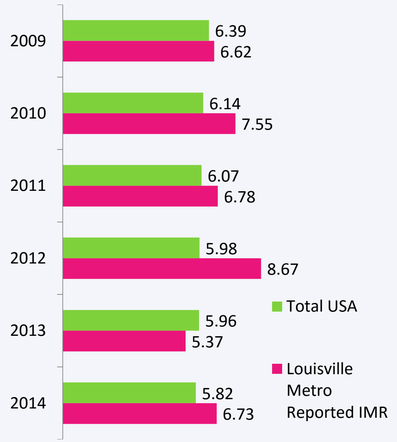
RESULTS

We analyzed 60,414 reported live births in Louisville Metro from 2009-2014. Infant mortality rate (per 100,000 live births) reported differs markedly by reporting criteria in the Louisville Metro Area.

Louisville Metro (LM) Infant Mortality Rate (IMR) and Estimated Gestational Age (EGA) Adjusted Rate

	2009	2010	2011	2012	2013	2014
Total births	10418	10201	10035	9918	9877	9665
Infant deaths (n)	69	77	68	86	53	65
IMR (total)	6.62	7.55	6.78	8.67	5.37	6.73
<20 weeks						
Infant deaths (n_1)	2	4	6	7	2	5
IMR excluding n_1	6.43	7.16	6.18	7.97	5.16	6.21
<24 weeks						
Infant deaths (n_2)	11	18	24	30	12	12
IMR excluding n_2	5.57	5.79	4.4	5.66	4.16	5.49
<28 weeks						
Infant deaths (n_3)	21	29	34	38	19	25
IMR excluding n_3	4.62	4.72	3.4	4.86	3.45	4.15

Comparison of US and Reported Louisville Metro IMR



WHO definition *: ''Live Birth'' means the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy, which, after such expulsion or extraction, breathes, or shows any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps.*

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Current live birth reporting requirements *: All States require the reporting of a live birth regardless of length of gestation or weight*

Using WHO criteria for IMR places Louisville in the range of Alabama, Mississippi, and Louisiana, the worse end of the national rankings. When ACOG criteria are used for IMR criteria the Louisville area ranks in the range of California, Connecticut, and Vermont, in the better end of the national rankings. The inconsistent underlying data for IMR calculation results in incorrect rankings.

CONCLUSIONS

This study emphasizes the importance of standardizing reporting criteria for IMR that is often confounded. Since IMR is used to justify public health interventions (e.g. immunizations, prenatal care), having proper data and accurate ranking allows for better allocation of resources and better alignment with needed programs and services. Given the lack of clear consensus on the limit of viability, a clear definition with consistent standards and application by healthcare providers is imperative to ensure reliability of public health surveillance. Further studies should examine whether inconsistencies exist across national data.

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